Gurudas College

B. Sc. Semester-II Internal Examination-2020

CHEMISTRY (HONOURS)

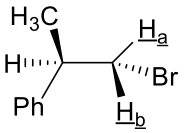
Paper: III (Organic)

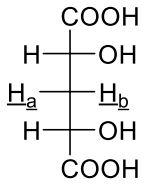
Time: 2 Hrs. **F.M: 50**

Group−A (Theory)

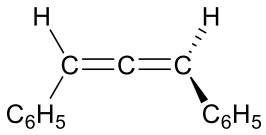
Answer any five questions 5×5 = 25

1. Identify the Pro-*R* and Pro-*S* hydrogen atoms (underlined) in the following molecules with explanation.

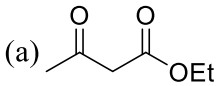
(i) 

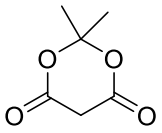
(ii) 

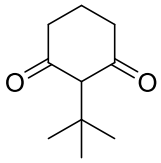
2. Draw the stable conformer of 1,2-difluoro ethane with explanation.
3. Find the optical activity of the following compound with symmetry element(s).

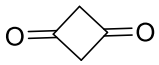


4. What is meant by secondary kinetic isotope effect? Explain with an example.
5. Which of the following compounds is 100% enol and why?

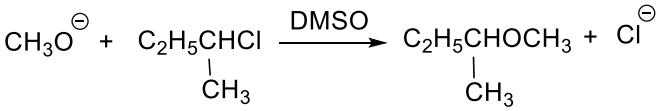
(a) 

(b) 

(c) 

(d) 

6. Which of the following compounds is the strongest base in aqueous medium and why?
   (a) Me_3N (b) Me_2NH (c) $MeNH_2$ (d) NH_3
7. What is the nucleophilic substitution mechanism and configuration of the product in the following nucleophilic substitution reaction?



8. Reaction of $(CH_3)_3CH$ with Cl_2 forms two products: $(CH_3)_2CHCH_2Cl$ (63%) and $(CH_3)_3CCl$ (37%). Why is the major product formed by cleavage of the stronger 1° C−H bond?

Group−B (Practical)

Answer any three questions 5×3 = 15

9. What happens when aniline is heated with glacial acetic acid?
10. Write down the name and structure of the product produced by the reaction of acetanilide with KBr and $KBrO_3$ in acetic acid.
11. What happens when acetone is refluxed with benzaldehyde in presence of dilute alkali?
12. What happens when urea is strongly heated in a dry test tube?

Group−C (Internal Assessment)

Answer any two questions $5 \times 2 = 10$

13. What are proton sponges? Explain with suitable illustration.
14. Explain the chirality of a chiral biphenyl system.
15. Identify the product in the following reaction showing its mechanism.